

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: Monia, B.P., Cowsert, L.M. and Manoharan, M.
- (ii) TITLE OF INVENTION: Antisense Oligonucleotide Inhibition of ras
- (iii) NUMBER OF SEQUENCES: 55
- (iv) CORRESPONDENCE ADDRESS:
- (A) ADDRESSEE: Jane Massey Licata
 - (B) STREET: 66 East Main Street
 - (C) CITY: Marlton
 - (D) STATE: NJ
 - (E) COUNTRY: USA
 - (F) ZIP: 08053
- (v) COMPUTER READABLE FORM:
- (A) MEDIUM TYPE: DISKETTE, 3.5 INCH, 1.44 Mb STORAGE
 - (B) COMPUTER: IBM COMPATIBLE
 - (C) OPERATING SYSTEM: WINDOWS 95
 - (D) SOFTWARE: WORDPERFECT 6.1 for WINDOWS
- (vi) CURRENT APPLICATION DATA:
- (A) APPLICATION NUMBER: not assigned
 - (B) FILING DATE: herewith
 - (C) CLASSIFICATION:
- (vii) PRIOR APPLICATION DATA 1:
- (A) APPLICATION NUMBER: 09/128,494
 - (B) FILING DATE: August 3, 1998
- (vii) PRIOR APPLICATION DATA 2:
- (A) APPLICATION NUMBER: 08/411,734
 - (B) FILING DATE: April 3, 1995
- (vii) PRIOR APPLICATION DATA 3:
- (A) APPLICATION NUMBER: PCT/US93/09346
 - (B) FILING DATE: October 1, 1993

(vii) PRIOR APPLICATION DATA 4:

(A) APPLICATION NUMBER: 07/958,134

(B) FILING DATE: October 5, 1992

(vii) PRIOR APPLICATION DATA 5:

(A) APPLICATION NUMBER: 08/007,996

(B) FILING DATE: January 21, 1993

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Jane Massey Licata

(B) REGISTRATION NUMBER: 32,257

(C) REFERENCE/DOCKET NUMBER: ISPH-0463

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: (856) 810-1515

(B) TELEFAX: (856) 810-1454

(2) INFORMATION FOR SEQ ID NO: 1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

CTTATATTCC GTCATCGCTC

20

(2) INFORMATION FOR SEQ ID NO: 2:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

002250 4554560

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(iii) The first two conditions are satisfied by all functions f . The third condition is satisfied by all functions f such that $\lim_{x \rightarrow \infty} f(x) = 0$.

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(iii) The following conditions are satisfied:

- (a) $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \log p_k = -\infty$.
- (b) $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n \log q_k = -\infty$.

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(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

CACCGACGGC G

11

(2) INFORMATION FOR SEQ ID NO: 12:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:

ACACCGACGG CGC

13

(2) INFORMATION FOR SEQ ID NO: 13:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:

CACACCGACG GCGCC

15

(2) INFORMATION FOR SEQ ID NO: 14:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

CCACACCGAC GCGGCC

16

(2) INFORMATION FOR SEQ ID NO: 15:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 16

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:

CACACCGACG GCGCCC

16

(2) INFORMATION FOR SEQ ID NO: 16:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 16:

CCCACACCGA CGGCGCCC

18

(2) INFORMATION FOR SEQ ID NO: 17:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 18

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 17:

CCACACCGAC GGCGCCA

18

(2) INFORMATION FOR SEQ ID NO: 18:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 25

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 18:

TTGCCACAC CGACGGCGCC CACCA

25

(2) INFORMATION FOR SEQ ID NO: 19:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 19:

CCACACCGCC GGCGCCC

17

(2) INFORMATION FOR SEQ ID NO: 20:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 20

CTGCCTCCGC CGCCGCGGCC

20

(2) INFORMATION FOR SEQ ID NO: 21:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 21:

CAGTGCCTGC GCCGCGCTCG

20

(2) INFORMATION FOR SEQ ID NO: 22:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 22:

AGGCCTCTCT CCCGCACCTG

20

(2) INFORMATION FOR SEQ ID NO: 23:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

[illegible]

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 26:

GCCTACGCCA CCAGCTCCAA C

21

(2) INFORMATION FOR SEQ ID NO: 27:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 17

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 27:

CTACGCCACC AGCTCCA

17

(2) INFORMATION FOR SEQ ID NO: 28:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 28:

GTACTCCTCT TGACCTGCTG T

21

(2) INFORMATION FOR SEQ ID NO: 29:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 21

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 29:

CCTGTAGGAA TCCTCTATTG T

21

(2) INFORMATION FOR SEQ ID NO: 30:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 30:

GGTAATGCTA AAACAAATGC

20

(2) INFORMATION FOR SEQ ID NO: 31:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 31:

GGAATACTGG CACTTCGAGG

20

(2) INFORMATION FOR SEQ ID NO: 32:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 32:

TACGCCAACA GCTCC

15

(2) INFORMATION FOR SEQ ID NO: 33:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 33:

TTTTCAGCAG GCCTCTCTCC

20

(2) INFORMATION FOR SEQ ID NO: 34:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 34:

TCAGTAATAG CCCCACATGG

20

(2) INFORMATION FOR SEQ ID NO: 35:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 35:

CCGGGTCCTA GAAGCTGCAG

20

(2) INFORMATION FOR SEQ ID NO: 36:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 36:

TAAATCAGTA AAAGAAACCG

20

(2) INFORMATION FOR SEQ ID NO: 37:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 37:

GGACACAGTA ACCAGGCGGC

20

(2) INFORMATION FOR SEQ ID NO: 38:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

1. *Chlorophyll a* (Chl *a*)
 2. *Chlorophyll b* (Chl *b*)
 3. *Chlorophyll c* (Chl *c*)
 4. *Chlorophyll d* (Chl *d*)
 5. *Chlorophyll e* (Chl *e*)
 6. *Chlorophyll f* (Chl *f*)
 7. *Chlorophyll g* (Chl *g*)
 8. *Chlorophyll h* (Chl *h*)
 9. *Chlorophyll i* (Chl *i*)
 10. *Chlorophyll j* (Chl *j*)
 11. *Chlorophyll k* (Chl *k*)
 12. *Chlorophyll l* (Chl *l*)
 13. *Chlorophyll m* (Chl *m*)
 14. *Chlorophyll n* (Chl *n*)
 15. *Chlorophyll o* (Chl *o*)
 16. *Chlorophyll p* (Chl *p*)
 17. *Chlorophyll q* (Chl *q*)
 18. *Chlorophyll r* (Chl *r*)
 19. *Chlorophyll s* (Chl *s*)
 20. *Chlorophyll t* (Chl *t*)
 21. *Chlorophyll u* (Chl *u*)
 22. *Chlorophyll v* (Chl *v*)
 23. *Chlorophyll w* (Chl *w*)
 24. *Chlorophyll x* (Chl *x*)
 25. *Chlorophyll y* (Chl *y*)
 26. *Chlorophyll z* (Chl *z*)
 27. *Chlorophyll aa* (Chl *aa*)
 28. *Chlorophyll ab* (Chl *ab*)
 29. *Chlorophyll ac* (Chl *ac*)
 30. *Chlorophyll ad* (Chl *ad*)
 31. *Chlorophyll ae* (Chl *ae*)
 32. *Chlorophyll af* (Chl *af*)
 33. *Chlorophyll ag* (Chl *ag*)
 34. *Chlorophyll ah* (Chl *ah*)
 35. *Chlorophyll ai* (Chl *ai*)
 36. *Chlorophyll aj* (Chl *aj*)
 37. *Chlorophyll ak* (Chl *ak*)
 38. *Chlorophyll al* (Chl *al*)
 39. *Chlorophyll am* (Chl *am*)
 40. *Chlorophyll an* (Chl *an*)
 41. *Chlorophyll ao* (Chl *ao*)
 42. *Chlorophyll ap* (Chl *ap*)
 43. *Chlorophyll aq* (Chl *aq*)
 44. *Chlorophyll ar* (Chl *ar*)
 45. *Chlorophyll as* (Chl *as*)
 46. *Chlorophyll at* (Chl *at*)
 47. *Chlorophyll au* (Chl *au*)
 48. *Chlorophyll av* (Chl *av*)
 49. *Chlorophyll aw* (Chl *aw*)
 50. *Chlorophyll ax* (Chl *ax*)
 51. *Chlorophyll ay* (Chl *ay*)
 52. *Chlorophyll az* (Chl *az*)
 53. *Chlorophyll a1* (Chl *a1*)
 54. *Chlorophyll a2* (Chl *a2*)
 55. *Chlorophyll a3* (Chl *a3*)
 56. *Chlorophyll a4* (Chl *a4*)
 57. *Chlorophyll a5* (Chl *a5*)
 58. *Chlorophyll a6* (Chl *a6*)
 59. *Chlorophyll a7* (Chl *a7*)
 60. *Chlorophyll a8* (Chl *a8*)
 61. *Chlorophyll a9* (Chl *a9*)
 62. *Chlorophyll a10* (Chl *a10*)
 63. *Chlorophyll a11* (Chl *a11*)
 64. *Chlorophyll a12* (Chl *a12*)
 65. *Chlorophyll a13* (Chl *a13*)
 66. *Chlorophyll a14* (Chl *a14*)
 67. *Chlorophyll a15* (Chl *a15*)
 68. *Chlorophyll a16* (Chl *a16*)
 69. *Chlorophyll a17* (Chl *a17*)
 70. *Chlorophyll a18* (Chl *a18*)
 71. *Chlorophyll a19* (Chl *a19*)
 72. *Chlorophyll a20* (Chl *a20*)
 73. *Chlorophyll a21* (Chl *a21*)
 74. *Chlorophyll a22* (Chl *a22*)
 75. *Chlorophyll a23* (Chl *a23*)
 76. *Chlorophyll a24* (Chl *a24*)
 77. *Chlorophyll a25* (Chl *a25*)
 78. *Chlorophyll a26* (Chl *a26*)
 79. *Chlorophyll a27* (Chl *a27*)
 80. *Chlorophyll a28* (Chl *a28*)
 81. *Chlorophyll a29* (Chl *a29*)
 82. *Chlorophyll a30* (Chl *a30*)
 83. *Chlorophyll a31* (Chl *a31*)
 84. *Chlorophyll a32* (Chl *a32*)
 85. *Chlorophyll a33* (Chl *a33*)
 86. *Chlorophyll a34* (Chl *a34*)
 87. *Chlorophyll a35* (Chl *a35*)
 88. *Chlorophyll a36* (Chl *a36*)
 89. *Chlorophyll a37* (Chl *a37*)
 90. *Chlorophyll a38* (Chl *a38*)
 91. *Chlorophyll a39* (Chl *a39*)
 92. *Chlorophyll a40* (Chl *a40*)
 93. *Chlorophyll a41* (Chl *a41*)
 94. *Chlorophyll a42* (Chl *a42*)
 95. *Chlorophyll a43* (Chl *a43*)
 96. *Chlorophyll a44* (Chl *a44*)
 97. *Chlorophyll a45* (Chl *a45*)
 98. *Chlorophyll a46* (Chl *a46*)
 99. *Chlorophyll a47* (Chl *a47*)
 100. *Chlorophyll a48* (Chl *a48*)
 101. *Chlorophyll a49* (Chl *a49*)
 102. *Chlorophyll a50* (Chl *a50*)
 103. *Chlorophyll a51* (Chl *a51*)
 104. *Chlorophyll a52* (Chl *a52*)
 105. *Chlorophyll a53* (Chl *a53*)
 106. *Chlorophyll a54* (Chl *a54*)
 107. *Chlorophyll a55* (Chl *a55*)
 108. *Chlorophyll a56* (Chl *a56*)
 109. *Chlorophyll a57* (Chl *a57*)
 110. *Chlorophyll a58* (Chl *a58*)
 111. *Chlorophyll a59* (Chl *a59*)
 112. *Chlorophyll a60* (Chl *a60*)
 113. *Chlorophyll a61* (Chl *a61*)
 114. *Chlorophyll a62* (Chl *a62*)
 115. *Chlorophyll a63* (Chl *a63*)
 116. *Chlorophyll a64* (Chl *a64*)
 117. *Chlorophyll a65* (Chl *a65*)
 118. *Chlorophyll a66* (Chl *a66*)
 119. *Chlorophyll a67* (Chl *a67*)
 120. *Chlorophyll a68* (Chl *a68*)
 121. *Chlorophyll a69* (Chl *a69*)
 122. *Chlorophyll a70* (Chl *a70*)
 123. *Chlorophyll a71* (Chl *a71*)
 124. *Chlorophyll a72* (Chl *a72*)
 125. *Chlorophyll a73* (Chl *a73*)
 126. *Chlorophyll a74* (Chl *a74*)
 127. *Chlorophyll a75* (Chl *a75*)
 128. *Chlorophyll a76* (Chl *a76*)
 129. *Chlorophyll a77* (Chl *a77*)
 130. <

20

20

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 39:

CAGACCCATC CATTCCCGTG

(2) INFORMATION FOR SEQ ID NO: 40:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 40:

GCCAAGAAAT CAGACCCATC

(2) INFORMATION FOR SEQ ID NO: 41:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 41:

AGGGGGAAGA TAAAACCGCC

20

(2) INFORMATION FOR SEQ ID NO: 42:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 42:

CGCTTCCATT CTTTCGCCAT

20

(2) INFORMATION FOR SEQ ID NO: 43:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 43:

CCGCACCCAG ACCCGCCCCT

20

(2) INFORMATION FOR SEQ ID NO: 44:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 44:

CAGCCCCCAC CAAGGAGCGG

20

(2) INFORMATION FOR SEQ ID NO: 45:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 45:

GTCATTTTAC ACCAGCAAGA

20

(2) INFORMATION FOR SEQ ID NO: 46:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 46:

CAGTCATTTT ACACCAGCAA

20

(2) INFORMATION FOR SEQ ID NO: 47:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 47:

CTCAGTCATT TCACACCAGC

20

(2) INFORMATION FOR SEQ ID NO: 48:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 48:

CGTGGGCTTG TTTTGTATCA

20

(2) INFORMATION FOR SEQ ID NO: 49:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 49:

CCATACAACC CTGAGTCCCA

20

(2) INFORMATION FOR SEQ ID NO: 50:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 50:

CAGACAGCCA AGTGAGGAGG

20

(2) INFORMATION FOR SEQ ID NO: 51:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 51:

CCAGGGCAGA AAAATAACAG

20

(2) INFORMATION FOR SEQ ID NO: 52:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 52:

TTTGTGCTGT GGAAGAACCC

20

(2) INFORMATION FOR SEQ ID NO: 53:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 20

(B) TYPE: Nucleic Acid

(C) STRANDEDNESS: Single

(D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 53:

GCTATTAAAT AACAAATGCAC

20

(2) INFORMATION FOR SEQ ID NO: 54:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 54:

ACTGATCACA GCTATTAAAT

20

(2) INFORMATION FOR SEQ ID NO: 55:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21
- (B) TYPE: Nucleic Acid
- (C) STRANDEDNESS: Single
- (D) TOPOLOGY: Linear

(iv) ANTI-SENSE: Yes

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 55:

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21